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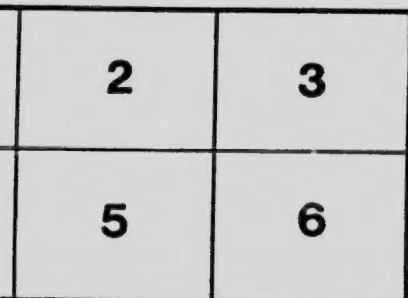
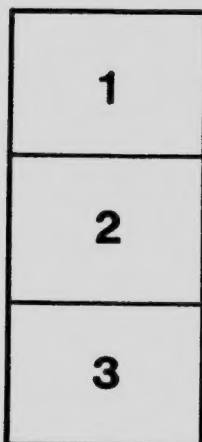
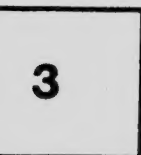
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A Short History of the White Valley Irrigation System



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DURING the early period of fruit growing in the Okanagan Valley it was thought possible to produce fruit without the aid of irrigation. Such a fallacy had its day and was but short lived. It had been tried in other parts, and, like other parts, the White Valley (an important section of the Okanagan) soon found out it was practically impossible to produce a marketable product without some sort of irrigation. Where Nature had not provided this it was necessary to go afield to such places as boasted of more than an ordinary supply. This meant bringing water, as a rule from some considerable distance, and necessitated in many cases a vast amount of labour and, as a consequence, a large amount of capital. Such schemes have been worked all the world over and it is safe to say that there are but few, if any, cases where such have failed. Wherever artificial irrigation has been resorted to it has been found to have had the desired result, that is, increase in size and quality of crops, which have invariably more than repaid for the amount expended in the use of the water. The White Valley Irrigation scheme is one of the largest in Canada, and in importance equal to anything of its kind ever attempted. Its object is to supply to one of the finest fruit producing districts of the world, the one thing that is needed, namely water. Of soil and sunshine, both quality and quantity respectively are to be found. Markets we also have and these markets are asking for our best produce. Here then is the mission of irrigation; and it is here that the vast importance of such a scheme as the White Valley boasts is appreciated. It was the one thing wanting, the one thing without which we could not have ranked with the finest fruit producing districts of the world; the one thing that has made the Okanagan Valley what it to-day is.

The following taken from a paper read by Mr. A. E. Ashcroft, C. E., at the last Irrigation Convention held at Calgary will give

some idea of the White Valley Irrigation Company's field of operations. Mr. Ashcroft after touching upon the "dry belt," with its small precipitation and very unequally distributed water-sheds, goes on to say:

"In the Okanagan Valley the suitability of the soil and climate for growing fruit and other special crops has long been recognized, and in the few favored localities where water is easily obtainable for irrigation great advances in this direction have been made.

Coldstream Ranch.

One of the most successful undertakings of this nature is the widely known Coldstream Ranch, owned by the Earl of Aberdeen and associates (now formed into a limited liability company.) Under the management of Mr. W. C. Ricardo this estate has been developed from an indifferent cattle ranch into a highly specialized farm, on which fruit, hops, vegetables, etc., are raised on a commercial scale, a large nursery for fruit and ornamental trees is established, besides raising grain and hay for the stock on the estate. All this has been accomplished by irrigation, the Coldstream Creek flowing through the property being diverted by ditches to cover the lower levels. Years ago Mr. Ricardo saw that if he would increase the area developed he must find a way to conserve the spring run-off for use in the late summer, and a remarkably efficient storage reservoir was made by building a dam across the outlet of a small mountain lake about 12 miles to the south of the ranch and situate about 2,500 feet above the valley. Four years ago a portion of the estate was subdivided into 20-acre lots and our irrigation system constructed to cover the subdivision (about 1,000 acres), which is fed entirely by the water now stored. These lots are settled on and planted out to fruit, mostly apples and prunes and the values have increased five and six fold since they were sold. The success thus obtained directed Mr. Ricardo's attention to securing a further supply of water to cover the higher levels of the property and he had surveys made to ascertain the practicability of bringing Jones Creek, one of the affluents

of the Shuswap River to serve this end. The plans called for the construction of 10 miles of canal through a hilly and densely timbered country and the construction of dams in the high plateau to insure a late supply of water at a total cost of \$50,000. This would bring under irrigation, 2,000 acres of the Coldstream Estate and 2,000 acres of intervening lands. As these latter were in private hands and the owners did not at first regard the scheme favourably enough to contribute to the cost, the plan was adopted of forming a company to build the work. This was done to acquire the benefits of Part IV of the Water Clauses Consolidation Act of the province. As an instance of the status of irrigation on the statutes, the company was advised that it would have to organize as a "Power" company and the title adopted accordingly was "The White Valley Irrigation and Power Company." It being one of the first incorporated for this purpose much new ground had to be broken in preparing the charter.

Enlargement of Scheme.

By the time actual construction was started, in the spring of 1906, it became evident that the scheme was capable of much extension, and that some 8,000 acres in the immediate vicinity of the City of Vernon could be brought under the system if it were planned on a large enough scale. A purchase and consolidation of two large cattle ranches by a Belgian Colonizing Syndicate and the subdivision of the remaining large property, the B. X. Ranch, facilitated negotiations, and arrangements have been entered into by which these lands contribute to the cost of the works. The capital has been increased and work on the full scheme is now being vigorously prosecuted.

Water Supply.

An ample supply of water is assured, there being a water-shed of over 150 square miles of timbered plateau, 4,500 to 5,500 feet high, tributary to the storage reservoirs, the larger of which, Lake Aberdeen, is 1,000 acres in extent and the other 600 acres. A dam is now being built of rock filled crib work with

earth in front, and made water tight by a skin of cement backed by three inch hewn plank which will impound a depth of 12 feet in the lake. This will be completed this fall and will provide 13,000 acre-feet of stored water. The lower reservoir will have a capacity of 4,000 acre-feet, and it is estimated that at least as much as the combined capacity of the reservoirs will be available from the natural flow of the stream before drawing upon the stored water.

Canal.

The head-gates of the canal, which is called the "Grey Canal" by permission of His Excellency the Governor-General, who visited the works last year, are situate 12 miles down the streams from the lower reservoir, and are 2,170 feet above the sea level; and the main canal, six miles of which have already been constructed, measures 14 feet across the bottom with side slopes of 1 to 1 and carries three feet depth of water. The grade is 5.28 per mile, or one-tenth per cent., and will convey 150 second feet for the first 8 miles, reducing in capacity as the area below it to be served diminishes.

Pipe Line.

A special feature of the system is the pipe line by which the water is conveyed across the White Valley, six miles above the Coldstream Ranch and five miles below the head-gates. This pipe line is 6,300 feet in length, with a fall of 157 feet in that distance; the lowest part of the line is 330 feet below the hydraulic grade and specially constructed pipe is used to sustain the pressure. A wooden stave pipe of 24 in. diameter is now installed and one of 36 in. diameter will be laid alongside this in the near future as more water is needed. A branch canal leaves the main just above the intake of the pipe line which carries water five miles along the south slope of the valley and discharges into Deer Creek, which drains the small storage reservoir already in use above the point where the water is taken out for irrigating the 1,000-acre subdivision alluded to above, thus reinforcing that system.

Problems.

One of the problems in connection with this project arises out of the incompleteness of existing legislation on the subject of stored water and the uncertainty of the status of prior but unused records from the same source. In Colorado, stored water has been ruled by the supreme court of that state to be a chattel, and saleable as such. For "power" purposes, the B. C. law would seem to imply the same, and as a "power" company a corporation may buy or sell water. An irrigation record by one individual must be made applicable to a specified tract of land, which must be owned by him at the time, and the owner of a ditch can only be a common carrier of the water appurtenant to the lands it serves.

Rates.

It was recognized at the outset that the rates to be charged to users of water should be based on the quantities used and not in the areas of irrigable land owned by the users. The unit of the "acre-foot" has been adopted, and a sliding scale of rates prepared and approved by the Government. There is no recognized "duty" of water in the province beyond the practice of the Government commissioners granting records of one "miner's inch" for every acre of land owned by the applicant, quite irrespective of whether all of the land is physically capable of being irrigated from the specified point of diversion, or of the quantity of water available from the specified source.

The scale of rates was prepared with a view to ultimately provide a fair return on the capital invested and at the same time to be low enough to make it a profitable investment for the users. Under a responsible company, with a permanent interest in the development and prosperity of the country the method adopted is, in the writer's opinion, the best that can be devised, as the control of the water is in expert hands and economy in its use encouraged. But the principle is open to the grave objection that the ownership and control of the water might be made an instrument of extortion in unscrupulous hands.

On the other hand a too rigid adherence to the principle of making certain waters appurtenant to certain restricted tracts of land will hamper seriously future development in this province.

Seepage.

Another problem which we have to face is that of "seepage"—where ditches and canals are carried along side hills, over gravel or sandy subsoils this will occur in places—it is of course to the interest of the company to prevent this as far as possible and the various remedies used by engineers will be tried. But the experience of other places points out that after a few years or less of irrigation there will be some of the lower lying land that will require under draining.

Weeds.

In the existing system on the Coldstream Ranch, weeds, both growing on the banks and in the water, are giving considerable trouble, and this nuisance will call for special measures to be taken in the layer work—sowing the banks with white clover and some other grass has been considered but the actual means to be adopted have not yet been decided upon.

Other Problems.

In this particular project under notice there have occurred many minor problems and difficulties among which may be mentioned the scarcity of labour, advance in cost of lumber and other material such as iron and cement; the cost of lumber affects the cost of wooden pipe; some of the engineering difficulties have not been small; the steepness of the canyon of June Creek has made some heavy flume and trestle work necessary and the banks of the canal for long distances are built up on crib work; the pipe line passes through a cluster of farm buildings and under the abutments of a highway bridge and required very careful locating; the heavy timber has meant the use of several tons of powder for blowing out the stumps, and outcroppings of rock have been met with.

The cost will approximate \$20.00 per acre for the lands benefited, and it is estimated

that about 20,000 acre-feet will be used annually when all the lands are brought under cultivation.

Most of the land will be held in small lots of 20 to 40 acres, requiring an intricate system of distributing laterals. Clippoletti weirs will be used for measuring the water with recording register. This will require a large field and office staff. Unlike many of the larger irrigation projects, this company looks only to the sale of water for its revenue and will not derive profit from sale of land. The total length of the Grey Canal when completed will be 30 miles and in order to bring the whole of the land under irrigation at the earliest possible date, this canal must be pushed forward to the head of Okanagan Lake. A large sum must be set aside annually for interest charges, betterments, additional storage work, rebuilding flumes and replacing them with concrete channels, etc., and it will be some time before sufficient water will be sold to put the company on a dividend earning basis."

* * *

Mr. Ashcroft in his paper speaks of a dam "being built." That was in July, 1907. This has since been completed, and is a fine piece of engineering work of its kind.

The Grey Canal was originally commenced with the usual teams and scrapers. Finding the work too slow for such a large undertaking the Company in May last installed a steam shovel. This has proved so eminently successful that another, made to special specifications to suit the rough country and the nature of the work, is about to commence operations on another portion of the line of canal.

The new method, in comparison with the old, besides doing the work so much the quicker, costs less than half for the same amount of work done by the latter.

The Company in their desire to push the scheme to completion have been working the steam shovel both night and day. The weekly average of dirt removed from the ditch, by the steam shovel, works out at 2,677 cubic yards, at a cost per cubic yard of 8 $\frac{3}{4}$ cents.

This includes a daily charge of \$7.20 for depreciation.

The work so far has gone along without a hitch. Where obstacles have presented themselves, they have been met with dogged determination, and have been overcome.

The cost of the enlargement of the scheme, when completed, and inclusive of subsidiary canals, is estimated to total about one million dollars.

This pamphlet has been compiled by the Agents of the Coldstream Estate Company Ltd. with a view to answering some of the many questions that are put to them by parties interested in the scheme, as possible settlers in this district. Its one other object is to show to these parties that we have one of the most complete systems of irrigation, which, coupled with the many natural advantages, makes the Okanagan Valley ideal for the production of all kinds of fruit and vegetables.

We shall be pleased at any time to give any information that lies in our power in reference to the foregoing.

C. G. GUY & CO.

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